

WHAT IS CLAIMED IS:

1. An optical element assembly in which an optical part is mounted on a platform for optical coupling to an optical element of an optical element chip mounted on said platform, wherein:

5 said optical element chip has said optical element formed on a protruding end face of a convexity protrusively provided on one side of a chip body;

 a groove is formed as an element mounting portion in a mounting surface of said platform on which said optical part is to be mounted;

10 said optical element chip is mounted on said mounting surface with said convexity of said optical element chip fitted in said element mounting portion so that said optical element is positioned with respect to said mounting surface; and

 said optical part is positioned with respect to said mounting surface and
15 mounted thereon, and a part receiving recess is formed in said mounting surface of said platform to establish optical coupling between said optical part and said optical element.

 2. The optical element assembly of claim 1, wherein: the position of said optical element with respect to said mounting surface is a position where
20 said optical element is parallel to said mounting surface at a predetermined depth from said mounting surface in one direction parallel to said mounting surface; and the position of said optical part with respect to said mounting surface is a position where the optical axis of said optical part is parallel to said mounting surface at said predetermined depth in said one direction parallel to
25 said mounting surface.

 3. The optical element assembly of claim 2, wherein a light inlet/outlet port of said optical element and the optical axis of said optical part are aligned

with each other.

4. The optical element assembly of claim 1, wherein: the position of said optical element with respect to said mounting surface is a position which is determined by surface-to-surface contact between a pair of opposed side
5 surfaces of said convexity and a pair of opposed wall surfaces of said element mounting portion and where said optical element is parallel to said mounting surface in the direction of arrangement of said side surfaces and said wall surfaces; and the position of said optical part with respect to said mounting surface is a position which is determined by contact between opposed wall
10 surfaces of said part receiving recess, which are parallel to said pair of opposed wall surfaces of said element part, respectively, and said optical part in the direction of arrangement of said pairs of opposed wall surfaces.

5. The optical element assembly of claim 4, wherein: said element mounting portion is part of a V-groove formed in said mounting surface; the
15 depth of said optical element from said mounting surface is determined by the width of said protruding end face of said convexity of said element mounting portion between marginal edges of said pair of side surfaces of said convexity; said optical element is parallel to said mounting surface; said part receiving recess has opposed wall surfaces parallel to opposed wall surfaces of said
20 V-groove, respectively; and the depth of the optical axis of said optical part from said mounting surface is determined by said contact between said opposed wall surfaces of said part receiving recess and said optical part.

6. The optical element assembly of claim 5, wherein said element mounting portion and said part receiving recess are different portions of a
25 common V-groove.

7. The optical element assembly of claim 5, wherein said element mounting portion and said part receiving recess are V-grooves parallel to each

other in a plane perpendicular to said mounting surface, and the width of the V-groove of said element mounting portion is narrower than the width of the V-groove of said part receiving recess.

8. An optical element assembly in which an optical part is mounted on a platform for optical coupling to an optical element of an optical element chip mounted on said platform, wherein:

said optical element chip has said optical element formed on the bottom of a concavity in one side of a chip body;

a convexity is formed as an element mounting portion on a mounting surface of said platform on which said optical part is to be mounted;

said optical element chip is mounted on said mounting surface with said concavity of said optical element chip engaged with said convexity of said element mounting portion so that said optical element is positioned with respect to said mounting surface; and

said optical part is positioned with respect to said mounting surface and mounted thereon, and a part receiving recess is formed in said mounting surface of said platform to establish optical coupling between said optical part and said optical element.

9. The optical element assembly of claim 8, wherein: the position of said optical element with respect to said mounting surface is a position where said optical element is parallel to said mounting surface at a predetermined height from said mounting surface in one direction parallel to said mounting surface; and the position of said optical part with respect to said mounting surface is a position where the optical axis of said optical part is parallel to said mounting surface at said predetermined height in said one direction parallel to said mounting surface.

10. The optical element assembly of claim 9, wherein a light inlet/outlet

port of said optical element and the optical axis of said optical part are aligned with each other.

11. The optical element assembly of claim 8, wherein: the position of said optical element with respect to said mounting surface is a position which is
5 determined by surface-to-surface contact between a pair of opposed side surfaces of said concavity and a pair of opposed wall surfaces of said element mounting portion and where said optical element is parallel to said mounting surface in the direction of arrangement of said side surfaces and said wall surfaces; and the position of said optical part with respect to said mounting
10 surface is a position which is determined by contact between opposed wall surfaces of said part receiving recess, which are parallel to said pair of opposed wall surfaces of said element part, respectively, and said optical part in the direction of arrangement of said pairs of opposed wall surfaces.

12. The optical element assembly of claim 11, wherein: said element
15 mounting portion is a quadrangular frustoidal portion surrounded by a square-frame-like V-groove formed in said mounting surface; the height of said optical element from said mounting surface is determined by the width of said protruding end face of said convexity of said element mounting portion between marginal edges of said pair of side surfaces of said convexity; said
20 optical element is parallel to said mounting surface; said part receiving recess has opposed wall surfaces parallel to a direction perpendicular to the direction of arrangement of said opposed side surfaces of said element mounting portion; and the height of the optical axis of said optical part from said mounting surface is determined by said contact between said opposed wall surfaces of
25 said part receiving recess and said optical part.

13. The optical element assembly of claim 12, wherein said part receiving recess is a V-groove.

14. A method of making an optical element assembly in which an optical part is mounted on a platform for optical coupling to an optical element of an optical element chip mounted on said platform, said method comprising the steps of:

5 forming a number of convexities of a predetermined height in rows and columns on one surface of a wafer by lithography and etching;

 forming an optical element on the protruding end face of each of said convexities in a predetermined position relationship to at least one pair of opposed side surfaces of said each convexity;

10 cutting said wafer for each optical element into individual optical element chips;

 forming in an optical element mounting surface of said platform a recess as an element mounting portion and a part receiving recess for positioning said optical element by lithography and etching with reference to
15 said mounting surface; and

 mounting one of said optical element chips on said platform with said convexity fitted in said element mounting portion so that said optical element is position with respect to said mounting surface.

15. A method of making an optical element assembly in which an
20 optical part is mounted on a platform for optical coupling to an optical element of an optical element chip mounted on said platform, said method comprising the steps of:

 forming a number of concavities of a predetermined depth in rows and columns in one surface of a wafer by lithography and etching;

25 forming an optical element on the bottom of each of said concavities in a predetermined position relationship to at least one pair of opposed wall surfaces of said each concavity;

cutting said wafer for each optical element into individual optical element chips;

forming on an optical element mounting surface of said platform a convexity as an element mounting portion and a part receiving recess for
5 positioning said optical element by lithography and etching with reference to said mounting surface; and

mounting one of said optical element chips on said platform with said concavity engaged with said element mounting portion so that said optical element is position with respect to said mounting surface.